

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-116768  
(43)Date of publication of application : 19.04.2002

(51)Int.Cl. G10K 15/02  
G06F 17/30  
G06F 17/60  
G10L 15/10  
G10L 15/00  
G10L 19/00  
H04Q 7/38  
// H04R 1/32

(21)Application number : 2000-306871

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(22)Date of filing : 05.10.2000

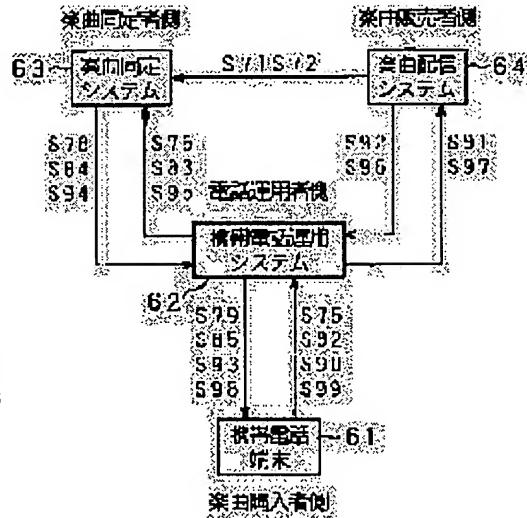
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## (54) PORTABLE TELEPHONE TERMINAL, MUSICAL PIECE IDENTIFICATION METHOD AND APPARATUS, MUSICAL PIECE IDENTIFICATION DELIVERY METHOD AND SYSTEM

### (57)Abstract:

PROBLEM TO BE SOLVED: To enable a user to easily identify and obtain a musical piece by using a partial segment of the musical piece and to simultaneously pay the price for the musical piece and to make reproduction, etc., of the musical piece.

SOLUTION: A portable telephone terminal 61 sends the recorded music data through a portable telephone operating system 62 to a musical piece identification system 63. The musical piece identification system 63 retrieves the musical piece to be a candidate from the music data and sends the corresponding data for an audition to the portable telephone terminal 61. When the user purchases the musical data of this musical piece as a result of the audition, the request signal to this extent is sent from the portable telephone terminal 61 to a music delivery system 64. The music data meeting this request is sent from the music delivery system 64 to the portable telephone system 61. The portable telephone operating system 62 adds the price corresponding to the retrieval identification of the musical piece and the delivery of the music data to communication charges and collects the same from the user (musical piece purchaser) of the portable telephone terminal 61 in place of the musical piece identifier and the musical piece seller.



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## CLAIMS

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[Claim(s)]

[Claim 1]A portable telephone terminal comprising:

A recording means which records music data incorporated via a sound electrical transducing means.

An encoding means which carries out compression encoding of the music data recorded [ above-mentioned ].

A transmitting means which transmits music data by which compression encoding was carried out [ above-mentioned ].

[Claim 2]A portable telephone terminal comprising:

A recording means which records music data incorporated via a sound electrical transducing means.

A feature extraction means which extracts characteristic quantity for identifying a musical piece name of the music from music data recorded [ above-mentioned ].

A transmitting means which transmits characteristic quantity extracted [ above-mentioned ].

[Claim 3]The portable telephone terminal according to claim 1 characterized by changing the directivity of a sound of the above-mentioned sound electrical transducing means in the time of a telephone call and the above-mentioned sound recording.

[Claim 4]The portable telephone terminal according to claim 2 characterized by changing the directivity of a sound of the above-mentioned sound electrical transducing means in the time of a telephone call and the above-mentioned sound recording.

[Claim 5]The portable telephone terminal according to claim 1 having a sound electrical transducing means for a telephone call, and a sound electrical transducing means for the above-mentioned sound recording, changing to a sound electrical transducing means for the above-mentioned telephone call as the above-mentioned sound electrical transducing means at the time of a telephone call, and changing to a sound electrical transducing means for the above-mentioned sound recording at the time of the above-mentioned sound recording.

[Claim 6]The portable telephone terminal according to claim 2 having a sound electrical transducing means for a telephone call, and a sound electrical transducing means for the above-mentioned sound recording, changing to a sound electrical transducing means for the above-mentioned telephone call as the above-mentioned sound electrical transducing means at the time of a telephone call, and changing to a sound electrical transducing means for the above-mentioned sound recording at the time of the above-mentioned sound recording.

[Claim 7]The portable telephone terminal according to claim 2, wherein the above-mentioned characteristic quantity is the dispersed short-time spectrum coefficient.

[Claim 8]A portable telephone terminal playing music by the above-mentioned reproduction means from music data which was provided with the following, accumulated music data received through a portable telephone system in the above-mentioned memory measure, and was accumulated in the above-mentioned memory measure.

A memory measure which memorizes music data.

A reproduction means which plays music from music data.

[Claim 9]The portable telephone terminal according to claim 8 which music data received through the above-mentioned portable telephone system is the data which carried out compression encoding of the real music data, and is characterized by providing the above-mentioned reproduction means with a decoding means which decodes data by which compression encoding was carried out [ above-mentioned ], and restores the above-mentioned

true sound easy data.

[Claim 10]The portable telephone terminal according to claim 8, wherein the above-mentioned memory measure is provided with a semiconductor storage cell.

[Claim 11]The portable telephone terminal according to claim 8 having the following, choosing one of two or more musical pieces displayed on the above-mentioned displaying means according to operation of a handler of the above-mentioned operation input means, and trying listening the selected musical piece concerned, or purchasing the selected musical piece concerned.

An operation input means provided with a handler by an operator operated.

A displaying means which performs a display which enables the above-mentioned operator's recognition of each of two or more musical pieces at least.

[Claim 12]It has an operation input means and a displaying means which performs a display which enables the above-mentioned operator's recognition of each of two or more musical pieces at least characterized by comprising the following. A portable telephone terminal choosing one of two or more musical pieces displayed on the above-mentioned displaying means according to operation of a handler of the above-mentioned operation input means, and trying listening the selected musical piece concerned, or purchasing the selected musical piece concerned.

A recording means which records music data incorporated via a sound electrical transducing means.

A music data processing means to extract characteristic quantity for identifying a musical piece name of the music concerned for music data recorded [ above-mentioned ] from compression encoding or music data recorded [ above-mentioned ].

Data by which compression encoding was carried out [ above-mentioned ], or a transmitting means which transmits characteristic quantity extracted [ above-mentioned ] through a portable telephone system.

A reception means which receives music data through the above-mentioned portable telephone system, a memory measure which memorizes music data which the above-mentioned reception means received, a reproduction means which plays music from music data memorized to the above-mentioned memory measure, and a handler by an operator operated.

[Claim 13]Search for temporal modulation distribution of an audible signal, the above-mentioned temporal modulation distribution is re-dispersed, and the feature procession is generated, The feature procession of a musical piece generated by re-dispersion of the above-mentioned temporal modulation distribution and the attribute of the musical piece concerned are saved and managed, A musical piece identification method identifying a musical piece name of a musical piece which includes a signal of a part of above by performing matching with two or more feature processions which are above-saved and are managed, and the feature procession generated from some signals of a musical piece.

[Claim 14]Processing which subtracts a regular noise from some signals of the above-mentioned musical piece in the case of the above-mentioned matching, and/. Or the musical piece identification method according to claim 13 performing processing which excepts a part of above-mentioned temporal modulation ingredient from matching, and/or processing which calculates a function of cross correlation of two or more feature processions which are above-saved and are managed, and the feature procession generated from some signals of a musical piece.

[Claim 15]A musical piece identification device identifying a musical piece name of a musical piece characterized by comprising the following.

Power-spectrum tools of analysis which search for temporal modulation distribution of an audible signal.

The feature procession creating means which is re-dispersed in the above-mentioned temporal modulation distribution, and generates the feature procession.

A musical piece database means to save and manage the feature procession of a musical piece and the attribute of a musical piece which were generated from the above-mentioned feature

procession creating means.

It has a matching means which performs matching with two or more feature processions saved and managed by the above-mentioned musical piece database means, and the feature procession generated from some signals of a musical piece, it is based on a result of the above-mentioned matching, and is a signal of a part of above.

[Claim 16] Processing in which the above-mentioned matching means subtracts a regular noise from some signals of the above-mentioned musical piece in the case of the above-mentioned matching, and/. Or processing which excepts a part of above-mentioned temporal modulation ingredient from matching and/. Or the musical piece identification device according to claim 15 performing processing which calculates a function of cross correlation of two or more feature processions saved and managed by the above-mentioned musical piece database means, and the feature procession generated from some signals of a musical piece.

[Claim 17] Are a musical piece identification distribution method using a portable telephone network, and music data which was incorporated by a sound electrical transducing means and digitized is recorded, Characteristic quantity for identifying a musical piece name of the music concerned for music data recorded [ above-mentioned ] from compression encoding or music data recorded [ above-mentioned ] is extracted, Data by which compression encoding was carried out [ above-mentioned ], or characteristic quantity extracted [ above-mentioned ] is transmitted to a portable telephone network, A candidate of a musical piece is searched from data which has been transmitted through the above-mentioned portable telephone network and by which compression encoding was carried out [ above-mentioned ], or characteristic quantity extracted [ above-mentioned ], Data for an audition of a musical piece searched [ above-mentioned ] is transmitted through the above-mentioned portable telephone network, It tries listening data for an audition of the above-mentioned musical piece transmitted through the above-mentioned portable telephone network, A musical piece identification distribution method determining a musical piece purchased from a candidate of a musical piece which tried [ above-mentioned ] listening, requiring distribution of a musical piece determined [ above-mentioned ] through the above-mentioned portable telephone network, distributing a musical piece demanded [ above-mentioned ] through the above-mentioned portable telephone network, and performing fee collection according to transmission of the above-mentioned data for an audition, and distribution of the above-mentioned musical piece.

[Claim 18] The musical piece identification distribution method according to claim 17 adding fee collection corresponding to candidate search of the above-mentioned musical piece, and transmission of data for an audition and the above-mentioned musical piece distribution by the candidate search to a charge of portable telephone communication according to use of the above-mentioned portable telephone network, and performing it.

[Claim 19] A musical piece identification distribution system comprising:

A recording means which records music data incorporated via a sound electrical transducing means.

A music data processing means to extract characteristic quantity for identifying a musical piece name of the music concerned for music data recorded [ above-mentioned ] from compression encoding or music data recorded [ above-mentioned ].

A transmitting means which transmits data by which compression encoding was carried out [ above-mentioned ], or characteristic quantity extracted [ above-mentioned ] through a portable telephone network.

A reception means which receives music data through the above-mentioned portable telephone network, and a memory measure which memorizes music data which the above-mentioned reception means received, A reproduction means which reproduces music data memorized to the above-mentioned memory measure, and an operation input means provided with a handler by an operator operated, It has a displaying means which performs a display which enables the above-mentioned operator's recognition of each of two or more musical pieces at least, A portable telephone terminal which chooses one of two or more musical pieces displayed on the above-mentioned displaying means according to operation of a handler of the above-mentioned

operation input means, and tries listening the selected musical piece concerned, or purchases the selected musical piece concerned. A candidate of a musical piece is searched from data which has been transmitted from the above-mentioned portable telephone terminal through the above-mentioned portable telephone network and by which compression encoding was carried out [ above-mentioned ], or characteristic quantity extracted [ above-mentioned ], A musical piece identification device which transmits data for an audition of a musical piece which searched [ above-mentioned ] to the above-mentioned portable telephone terminal through the above-mentioned portable telephone network, When distribution of a musical piece chosen from the above-mentioned portable telephone terminal under an audition of the above-mentioned data for an audition is required through the above-mentioned portable telephone network, manage a musical piece distribution system which transmits music data according to the demand concerned to the above-mentioned portable telephone terminal through the above-mentioned portable telephone network, and communication on the above-mentioned portable telephone network, and. The above-mentioned cellular-phone controlling device which performs fee collection according to transmission of the above-mentioned data for an audition, and distribution of the above-mentioned musical piece.

[Claim 20]Fee collection to a user of the above-mentioned portable telephone terminal corresponding to transmission of data for an audition based on candidate search of the above-mentioned musical piece and its candidate search with the above-mentioned musical piece identification device, and musical piece distribution by the above-mentioned musical piece distribution system, The musical piece identification distribution system according to claim 19 carrying out to the above-mentioned cellular-phone controlling device side by adding to a charge of portable telephone communication.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

#### [0001]

[Field of the Invention]This invention relates, for example to the system, method, and device for electronic music distribution.

It is related with the portable telephone terminal, the musical piece identification method and the device, musical piece identification distribution method, and system for performing musical piece distribution using especially a cellular phone.

#### [0002]

[Description of the Prior Art]In recent years, a huge number of new songs are announced. It is an absolutely impossible situation to get to know those all also including various musical pieces created in the past.

There are many opportunities for these various musical pieces to be passed in the program of

television broadcasting or a radio broadcast and a commercial message, or hear the musical piece irrespective of one's intention with various people passing [ therefore ] in the street in many cases.

[0003]Thus, out of the musical piece which is full of the circumference, when it is going to obtain a certain pleasing musical piece, generally a buyer will step on procedure like the turn of the following (1) – (4).

- (1) Hear a musical piece.
- (2) Investigate a musical piece name.
- (3) Go to a musical piece store.
- (4) Specify a musical piece name and purchase a musical piece.

[0004]

[Problem(s) to be Solved by the Invention]However, in many cases, investigation of the musical piece name of the above (2) takes a great labor. While getting to know a musical piece, also when a musical piece name can be known, in the case of the music of a certain thing for which only the part was heard, for example, the music heard by the inside of a program, or a commercial message, the music heard at the time of going out, etc., it does not result in acquisition after all in many cases, without the ability to identify the musical piece name. On the other hand, even when a musical piece name can be known as a result of investigation, in order for a musical piece to actually come to hand, it is necessary to visit a store or to use electronic music distribution etc. When using electronic music distribution, the personal computer of that to which he does not need to visit a store is operated, INTANETTOHE is connected, the method of paying to a distribution person is registered, and action of a multi stage story, such as downloading a musical piece, is needed.

[0005]Then, this invention is made in view of such the actual condition, and is a thing. the musical piece which reproduction, broadcast, etc. are made as for the purpose -- or -- the, even if it is a fragment in part, It is providing the portable telephone terminal, the musical piece identification method and the device, musical piece identification distribution method, and system which enable identification and acquisition (for example, purchase) of the musical piece easily, and enable payment of the price for the musical piece, reproduction of a musical piece, etc.

[0006]

[Means for Solving the Problem]A portable telephone terminal of this invention solves a technical problem mentioned above by having a recording means which records music data incorporated via a sound electrical transducing means, an encoding means which carries out compression encoding of the music data recorded [ above-mentioned ], and a transmitting means which transmits music data by which compression encoding was carried out [ above-mentioned ].

[0007]A recording means which records music data in which a portable telephone terminal of this invention was incorporated via a sound electrical transducing means, From music data recorded [ above-mentioned ], a technical problem mentioned above is solved by having a feature extraction means which extracts characteristic quantity for identifying a musical piece name of the music, and a transmitting means which transmits characteristic quantity extracted [ above-mentioned ].

[0008]A memory measure a portable telephone terminal of this invention remembers music data to be, A technical problem mentioned above is solved by playing music by the above-mentioned reproduction means from music data which has a reproduction means which plays music from music data, accumulated music data received through a portable telephone system in the above-mentioned memory measure, and was accumulated in the above-mentioned memory measure.

[0009]A recording means which records music data in which a portable telephone terminal of this invention was incorporated via a sound electrical transducing means, A music data processing means to extract characteristic quantity for identifying a musical piece name of the music concerned for music data recorded [ above-mentioned ] from compression encoding or music data recorded [ above-mentioned ], A transmitting means which transmits data by which compression encoding was carried out [ above-mentioned ], or characteristic quantity extracted

[ above-mentioned ] through a portable telephone system, A reception means which receives music data through the above-mentioned portable telephone system, and a memory measure which memorizes music data which the above-mentioned reception means received, A reproduction means which plays music from music data memorized to the above-mentioned memory measure, It has an operation input means provided with a handler by an operator operated, and a displaying means which performs a display which enables the above-mentioned operator's recognition of each of two or more musical pieces at least, A technical problem mentioned above is solved by choosing one of two or more musical pieces displayed on the above-mentioned displaying means according to operation of a handler of the above-mentioned operation input means, and trying listening the selected musical piece concerned, or purchasing the selected musical piece concerned.

[0010]Next, a musical piece identification method of this invention searches for temporal modulation distribution of an audible signal, The feature procession of a musical piece which was re-dispersed in the above-mentioned temporal modulation distribution, generated the feature procession, and was generated by re-dispersion of the above-mentioned temporal modulation distribution, and the attribute of the musical piece concerned are saved and managed, By performing matching with two or more feature processions which are above-saved and are managed, and the feature procession generated from some signals of a musical piece, a technical problem mentioned above is solved by identifying a musical piece name of a musical piece including a signal of a part of above.

[0011]Power-spectrum tools of analysis which a musical piece identification device of this invention asks for temporal modulation distribution of an audible signal, The feature procession creating means which is re-dispersed in the above-mentioned temporal modulation distribution, and generates the feature procession, The feature procession of a musical piece generated from the above-mentioned feature procession creating means, and a musical piece database means to save and manage the attribute of a musical piece, It has a matching means which performs matching with two or more feature processions saved and managed by the above-mentioned musical piece database means, and the feature procession generated from some signals of a musical piece, A technical problem mentioned above is solved by identifying a musical piece name of a musical piece including a signal of a part of above based on a result of the above-mentioned matching.

[0012]Next, a musical piece identification distribution method of this invention is a musical piece identification distribution method which used a portable telephone network, Music data which was incorporated by a sound electrical transducing means and digitized is recorded, Characteristic quantity for identifying a musical piece name of the music concerned for music data recorded [ above-mentioned ] from compression encoding or music data recorded [ above-mentioned ] is extracted, Data by which compression encoding was carried out [ above-mentioned ], or characteristic quantity extracted [ above-mentioned ] is transmitted to a portable telephone network, A candidate of a musical piece is searched from data which has been transmitted through the above-mentioned portable telephone network and by which compression encoding was carried out [ above-mentioned ], or characteristic quantity extracted [ above-mentioned ], Data for an audition of a musical piece searched [ above-mentioned ] is transmitted through the above-mentioned portable telephone network, It tries listening data for an audition of the above-mentioned musical piece transmitted through the above-mentioned portable telephone network, A technical problem mentioned above is solved by determining a musical piece purchased from a candidate of a musical piece which tried [ above-mentioned ] listening, requiring distribution of a musical piece determined [ above-mentioned ] through the above-mentioned portable telephone network, distributing a musical piece demanded [ above-mentioned ] through the above-mentioned portable telephone network, and performing fee collection according to transmission of the above-mentioned data for an audition, and distribution of the above-mentioned musical piece.

[0013]A recording means which records music data in which a musical piece identification distribution system of this invention was incorporated via a sound electrical transducing means, A music data processing means to extract characteristic quantity for identifying a musical piece

name of the music concerned for music data recorded [ above-mentioned ] from compression encoding or music data recorded [ above-mentioned ], A transmitting means which transmits data by which compression encoding was carried out [ above-mentioned ], or characteristic quantity extracted [ above-mentioned ] through a portable telephone network, A reception means which receives music data through the above-mentioned portable telephone network, and a memory measure which memorizes music data which the above-mentioned reception means received, A reproduction means which reproduces music data memorized to the above-mentioned memory measure, and an operation input means provided with a handler by an operator operated, It has a displaying means which performs a display which enables the above-mentioned operator's recognition of each of two or more musical pieces at least, A portable telephone terminal which chooses one of two or more musical pieces displayed on the above-mentioned displaying means according to operation of a handler of the above-mentioned operation input means, and tries listening the selected musical piece concerned, or purchases the selected musical piece concerned, A candidate of a musical piece is searched from data which has been transmitted from the above-mentioned portable telephone terminal through the above-mentioned portable telephone network and by which compression encoding was carried out [ above-mentioned ], or characteristic quantity extracted [ above-mentioned ], A musical piece identification device which transmits data for an audition of a musical piece which searched [ above-mentioned ] to the above-mentioned portable telephone terminal through the above-mentioned portable telephone network, When distribution of a musical piece chosen from the above-mentioned portable telephone terminal under an audition of the above-mentioned data for an audition is required through the above-mentioned portable telephone network, Manage a musical piece distribution system which transmits music data according to the demand concerned to the above-mentioned portable telephone terminal through the above-mentioned portable telephone network, and communication on the above-mentioned portable telephone network, and. A technical problem mentioned above is solved by consisting of the above-mentioned cellular-phone controlling device which performs fee collection according to transmission of the above-mentioned data for an audition, and distribution of the above-mentioned musical piece.

[0014]A mechanism in which heard music can be investigated easily according to this invention, Structure which can obtain the musical piece easily is provided as one, Namely, a heard musical piece (musical piece which a performance, playback, broadcast, etc. are made), or its thing [ recording a fragment in part and enabling realization even of investigation of a musical piece name, the purchase of a musical piece, payment of a price, and playback of a musical piece by one set only of a terminal handling ], It makes it possible for a buyer's giving up purchase, without the ability to identify a musical piece to decrease, and to save time and a labor for purchase remarkably.

[0015]

[Embodiment of the Invention]Hereafter, the desirable embodiment of this invention is described, referring to drawings.

[0016]First, a personal digital assistant is described as the 1st invention, then a music identification method is described as the 2nd invention, and an electronic music identification distribution service system is further described as the 3rd invention.

[0017]The outline of the transmission section of the portable telephone terminal as 1 embodiment in which the personal digital assistant of the 1st invention is applied is shown in drawing 1, and the outline of a receive section is shown in drawing 2.

[0018]As the transmission section of the portable telephone terminal of this embodiment has the same composition as a common cell phone unit and abbreviated \*\* and it is shown in drawing 1, The microphone 1 as a sound electrical transducing means, the ten key to "0" – "9", Various keys and various menus, such as a call start key, a telephone call termination key, a power turn / off-key, An icon, With the key input section 2 and the microphone 1 provided with the selecting means for selection of application etc. (for example, the jog dial etc. which have a push-switch function are included). The analog audible signal by which sound electrical conversion was carried out. The abnormal conditions to the multiplexer 8 which multiplexes the

signal from A/D converter 4 changed into a digital audible signal, the coding equipment 6 for sounds which codes a digital audible signal (for example, call voice signal at the time of a telephone call), and the key input section 2 and the coding equipment 6 for sounds, etc., and the high frequency signal for electrical transmission. It has the modulator 9 grade to perform. Since these each component is the same as that of what is carried in the conventional cell phone unit, explanation of these detailed operations is omitted here.

[0019]In the transmission section of the portable telephone terminal of this embodiment, different original portions from a common cell phone unit are the sound recording button 3, the switch 5, and the music data treating part 7, and explain these detailed operations hereafter.

[0020]The sound recording buttons 3 are for example, one (ON) / OFF (OFF) button, and the ON-and-OFF signal is a directive switching control signal of the microphone 1, and a switching control signal of the switch 5.

[0021]When the sound recording button 3 concerned is made at the OFF (OFF), the directivity of the microphone 1 is set up at a short distance as an object for a telephone, and the switch 5 is set to the coding equipment 6 side for sounds. Therefore, the audible signal (in this case, it becomes an audio signal at the time of a telephone call) inputted through the microphone 1 when the sound recording button 3 concerned was made at OFF, it should be digitized by A/D converter 4, and be coded with the coding equipment 6 for sounds, and do as the voice data (digital bit stream data) used for telephone call electrical transmission — further, after a high frequency signal becomes irregular with the modulator 9, it is transmitted with employment cis- TEMUHE of a cellular phone company. When the key input section 2 is operated by the operator and the input of a number, an operating command, etc. is made from the key input section 2 concerned at the time of this telephone call, that key input signal, It is combined with the above-mentioned voice data by the multiplexer 6, and after a high frequency signal becomes irregular with the above-mentioned modulator 9 further, it is transmitted with employment cis- TEMUHE of a cellular phone company. The above is completely the same as the basic motion of the conventional cellular phone.

[0022]On the other hand, when the sound recording button 3 is made by the one (ON), the directivity of the microphone 1 is set as a long distance as an object for music sound recording, and the switch 5 at this time is set to the music data treating part 7 side. By this the audible signal (in this case, it becomes a music signal) inputted through the microphone 1, It is digitized by A/D converter 4, like the after-mentioned, compression encoding or after feature extraction is carried out, it is bit-stream-ized by the music data treating part 7, and it is sent to the temporary storage part 10, and predetermined is accumulated by time (for example, for several seconds) at least. The bit stream concerning the music data for the predetermined time accumulated in the temporary storage part 10 concerned is read according to the read instruction signal [ automatic or ] from the key input section 2 by an operator's operation, and is sent to the multiplexer 8. The requirement signal etc. which were outputted from the key input section 2 according to an operator's operation and which are mentioned later are inputted into the multiplexer 8 concerned, the bit stream concerning the music data for the above-mentioned predetermined time and the signal from the above-mentioned key input section 2 multiplex, and it is sent to the modulator 9. From the modulator 9, like the time of the above-mentioned telephone call, the abnormal conditions to a high frequency signal are made, and it is transmitted with cellular-phone employment cis- TEMUHE.

[0023]The method of changing the directivity of one microphone may be used for directive regulation of the microphone 1, and the method of changing and using several directive different microphones may be used for it. The above-mentioned temporary storage part 10 may newly be formed as a mass memory other than the memory with which a common cell phone unit is provided, and when the memory provided in the common cell phone unit is a bulk memory, the memory may be used for it as it is. The above-mentioned temporary storage part 10 may be possible also for using with the memory 18 of a receive section mentioned later in common, and may be dismountable like a semiconductor memory card. If a dismountable thing is used like a semiconductor memory card as the above-mentioned temporary storage part 10, Identification of a musical piece name, the purchase of a musical piece, etc. which are mentioned later can be

performed also with the musical piece acquired with various devices, such as not only a musical piece but an another portable telephone terminal, a portable information processor, etc. which were incorporated with the microphone 1.

[0024]The short-time music data of the above-mentioned predetermined time in which the above-mentioned music data treating part 7 was accumulated in the above-mentioned temporary storage part 10 (it is hereafter considered as sound recording suitably). The feature quantity which is needed for generation or musical piece name identification in the coding data which is needed for identification of the musical piece name and which is mentioned later is extracted from (it is hereafter called a music fragment or a music clip).

[0025]That is, in this embodiment, the above-mentioned music data treating part 7 can take the following 1st and any of the 2nd composition they are.

[0026]The composition of the 1st music data treating part 7 is the composition of using coding equipment for audio compression, such as what is called an MPEG audio, as they are, for example. In this case, compression encoding will be carried out as it is with the above-mentioned coding equipment for audio compression, it will be transmitted, the music fragment recorded by the temporary storage part 10 will be sent to the musical piece identification system mentioned later, and conversion to the feature quantity required for musical piece name identification mentioned later will be performed by the musical piece identification system side concerned. According to this example, it is only common coding equipment, and since it is good, the composition which must be carried in the portable telephone terminal of this embodiment becomes possible [ reducing the cost of a portable telephone terminal ]. Since feature extraction later mentioned for musical piece name identification will be simultaneously performed by the musical piece identification system side in the case of this example, About the musical piece which can introduce an identification method with high accuracy which needs a lot of operations for the feature extraction concerned, and cannot be identified automatically. The person of the musical piece identification system side can hear it, and it can also check, and when a still newer identification algorithm is developed, there is an advantage, like what transposes the old identification algorithm to the new identification algorithm concerned becomes easy.

[0027]The composition of the 2nd music data treating part 7 is composition which performs feature extraction using the feature sampling later mentioned in the music data treating part 7 concerned, and codes the characteristic quantity information (namely, feature vector). In the case of this example, compared with music data [ like the 1st composition ] whose information on the characteristic quantity obtained by the music data treating part 7 concerned is and by which compression encoding was carried out, that data volume decreases far. For this reason, there is an advantage which can save the storage capacity (capacity of a memory) of said temporary storage part 10, the electrical transmission capacity at the time of transmitting that data, electrical transmission time, etc.

[0028]Next, the receive section of the portable telephone terminal of this embodiment which showed drawing 2 also has the same composition as the conventional cell phone unit and abbreviated \*\*, By the demodulator 11 which restores to the high frequency signal received via the antenna, the demultiplexer 12 which separates the multiplexed data, and the demultiplexer 12. By the decryption machine 15 for sounds and the above-mentioned decryption which decrypt the separated voice data for a telephone call. By the loudspeaker 17 and the demultiplexer 12 which carry out sound emission of the analog voice signal for a telephone call from D/A converter 16 and D/A converter 16 which change the obtained digital sound data for a telephone call into an analog voice signal. It has the delay 14 grade which consists of the display processing part 13 which generates the signal for a display, a liquid crystal display device, etc. from the data of the number included in the separated control data, a character, etc. Since these each component is the same as that of what is carried in the conventional cell phone unit, explanation of these detailed operations is omitted here.

[0029]On the other hand in the receive section of the portable telephone terminal of this embodiment, a different original portion from a common cell phone unit, As composition of a music signal processor, it is that the memory 18, the decryption machine 19 for audios, D/A converter 20, and the loudspeaker 21 are formed, and these detailed operations are explained

hereafter.

[0030]In the receive section which shows this drawing 2, when the music data concerning this embodiment different from the voice data for a telephone call is contained in the received data to which it restored with said demodulator 11, the above-mentioned demultiplexer 12 separates the music data concerned from received data, and sends it to the memory 18. The memory 18 accumulates the music data concerned temporarily. The thing of the memory 18 concerned built in the portable telephone terminal may also be dismountable like a semiconductor memory card. It is convenient to reproduce the acquired music data by other apparatus when a dismountable thing is used like a semiconductor memory card as the memory 18.

[0031]After all or sufficient data of a musical piece is received, the above-mentioned music data is read from the memory 18, is sent and decoded by the decoder 19 for audios, and is further outputted as a sound by the loudspeaker 21, headphone, etc. through D/A converter 20. About D/A converter 20 and the loudspeaker 21. In order to reduce part mark, may use with D/A converter 16 of a speech-signal-processing system, and the loudspeaker 17 in common, but with the audio signal for a telephone call, and the music signal for musical pieces. Since the tone quality generally needed differs (for example, the object for music is quality), it is desirable to provide separately according to the tone quality needed, respectively.

[0032]Next, the identification method of the musical piece name as the 2nd invention is explained below.

[0033]The musical piece identification method concerning this invention is divided roughly, and it is performed by two flows, the registration processing to the database of the musical piece used as processing of the preceding paragraph story of musical piece identification, and the actual musical piece identification processing using the registered musical piece database, so that it may state below.

[0034]The system configuration for the registration processing to the database of the above-mentioned musical piece in the musical piece identification method concerning this invention is shown in drawing 3.

[0035]In drawing 3, two or more composition data 31 of each distributed via what is called a compact disk (CD), a network, etc. is sent to the power-spectrum analyzor 33. The power-spectrum analyzor 33 changes two or more inputted composition data 31 of each into temporal modulation distribution, and sends the temporal modulation distribution data obtained, respectively to the feature procession generation part 34.

[0036]In the feature procession generation part 34, musical piece feature procession (feature vector)  $A_{ft}$  respectively corresponding to each musical piece is generated by re-sampling the temporal modulation distribution data corresponding to each musical piece with predetermined frequency and time interval. However, as shown in (a) of drawing 4, "f" of the above-mentioned musical piece feature procession  $A_{ft}$  expresses the index (line) of the frequency direction of a procession, and "t" expresses the index (sequence) of the time direction. The data of musical piece feature procession  $A_{ft}$  corresponding to these each musical piece is matched with the attribute data 32 of each musical piece, such as an ID number etc. of the musical piece name of each musical piece distributed with the above-mentioned composition data 31, a player name, and a musical piece, and is registered into the database 35.

[0037]Next, the system configuration for the musical piece identification using the musical piece database registered [ above-mentioned ] is shown in drawing 5.

[0038]a part of musical piece for about several seconds (said music fragment) obtained by the arbitrary methods of the portable telephone terminal built over the 1st invention mentioned above in this drawing 5, or others -- the data 41 is sent to the same power-spectrum analyzor 43 as above-mentioned drawing 3, and is changed into temporal modulation distribution. In the same feature procession generation part 44 as above-mentioned drawing 3, the temporal modulation distribution data from the power-spectrum analyzor 43 is re-sampled with predetermined frequency and time interval, and music fragment feature procession (feature vector)  $S_{fu}$  is generated. However, as shown in (b) of drawing 4, "f" of music fragment feature

procession  $S_{fu}$  expresses the index (line) of the same frequency direction of a procession as the above, and "u" expresses the index (sequence) of a time direction. The data of this music fragment feature procession  $S_{fu}$  is sent to the matching part 45. When it is made to carry out to extraction of characteristic quantity in said portable telephone terminal, the same composition as the power-spectrum analyzor 43 of the drawing 5 concerned and the feature procession generation part 44 will be provided in the voice data treating part 7 of said portable telephone terminal as composition for characteristic quantity extraction. On the other hand, when a portable telephone terminal performs only compression encoding of music data and it does not extract characteristic quantity, The data which carried out extension decryption of the data which compression encoding was carried out and has been transmitted with said portable telephone terminal as the data 41 of the music fragment supplied to the power-spectrum analyzor 43 of this drawing 5 will be used.

[0039]The data 42 which consists of musical piece feature procession  $A_{ft}$  about two or more musical pieces registered into the above-mentioned database 35 and the attribute data 32 of each musical piece, such as an ID number of a musical piece name, a player name, and a musical piece, corresponding, respectively is also inputted into the matching part 45. Two or more musical piece feature procession  $A_{ft}$ , i.e., musical piece feature vector, by which the matching part 45 concerned was obtained from the database 35. It uses, music fragment feature procession  $S_{fu}$ , i.e., the music fragment feature vector, which were supplied from the above-mentioned feature procession generation part 44. When it matches by the below-mentioned method (vector matching), the similarity of these vectors is computed and the similarity between the above-mentioned music fragment feature vector and a musical piece feature vector is over the predetermined threshold, About the musical piece corresponding to the musical piece feature vector concerned, the similarity Q and similarity output the data 46 which consists of the time (the similarity maximum time) T used as the maximum, and the attribute data 32.

[0040]Here, matching by the above-mentioned matching part 45 is performed as follows using cross correlation.

[0041]As shown in drawing 4, musical piece feature procession  $A_{ft}$  is the feature procession for two or more musical piece all songs, and music fragment feature procession  $S_{fu}$  serves as the feature (it deteriorated) procession of a part of a certain musical piece. Although the cross correlation of these processions should just make similarity theoretically the correlation value of the time used as the maximum, since noise is usually added to music fragment feature procession  $S_{fu}$ , the following operations are performed and noise resistance is improved.

[0042]First, music fragment feature procession  $S_{fu}$  is changed with a following formula (1).

[0043]

$S'_{fu} = M_{fu} (S_{fu} - B_{fu})$  (1), however  $B_{fu}$  in a formula are the constant matrices for reducing a steady noise component, for example, are created by the minimum in each frequency component, etc.  $M_{fu}$  in a formula is a procession which carries out the mask of a part of music fragment feature procession  $S_{fu}$  (portion shown in [ each / m ] a figure), as shown in (c) – (e) of drawing 4 of drawing 4. Mask-matrix  $M_{fu}$  shown in (c) of drawing 4 is a procession for carrying out the mask of the low-frequency component, and according to this, when low frequency noises, such as a traffic noise, are strong, it becomes effective in removing these low frequency noises from music fragment feature procession  $S_{fu}$ , for example. Mask-matrix  $M_{fu}$  shown in (d) of drawing 4 is a procession for performing a time mask, with this time mask, it is that for example, a music ingredient takes out only strong time, and stable conducts matching becomes realizable from music fragment feature procession  $S_{fu}$ . Mask-matrix  $M_{fu}$  shown in (e) of drawing 4 is a procession for carrying out the mask of the voice component, By removing the frequency range (for example, 100 Hz – 1 kHz) where most voice components are contained from music fragment feature procession  $S_{fu}$ , when there is voice mixing, for example, it becomes possible to remove

the voice component. In addition, although various mask patterns can be considered, these masks are changed and used and noise resistance strong stable matching is performed by choosing what has the highest similarity.

[0044]Next, the similarity in each time is calculated with a following formula (2) using conversion of the above-mentioned formula (1).

[0045]

[Equation 1]

$$R(t) = \frac{\sum_u \sum_f A_{f(t+u)} S'_{fu}}{\sqrt{\sum_u \sum_f A_{f(t+u)}^2 \sum_u \sum_f S_{fu}^2}} \quad (2)$$

[0046]It asks for the similarity Q of a musical piece and a music fragment, and the similarity maximum time T like a formula (3) and a formula (4) by the greatest thing and its time among the similarity of each time.

[0047]Q=max<sub>t</sub>R(t) (3) T=argmax<sub>t</sub>R(t) In the (4) matching part 45, the matching method which is shown in drawing 6 and which it flowed out and was explained above is realized.

[0048]In drawing 6, various kinds of mask patterns considered to be required, such as a mask of the low-frequency component mentioned above, a time mask, a mask of a voice component, are beforehand prepared for the matching part 45, and one mask pattern of them is chosen as the tetraethylpyrophosphate S51 in advance of conducts matching.

[0049]Next, in the matching part 45, a judgment of whether to have processed all the mask patterns is performed as Step S52, When it judges with processing of all the mask patterns followed and prepared for processing of Step S53 when it judged with no processing of mask patterns still being completed having been completed, it progresses to processing of Step S55.

[0050]When it is judged with no processing of mask patterns still being completed in Step S52 and progresses to processing of Step S53, in the matching part 45. The correlation function R(t) is calculated using a mask pattern selected at Step S51, and a value obtained by calculating the similarity Q and the similarity maximum time T is saved in the following step S54. After that, it returns to Step S51 and a mask pattern is chosen again.

[0051]On the other hand, in Step S52, if it is judged with processing of all the prepared mask patterns having been completed and progresses to processing of Step S55, by the matching part 45, it will have the greatest thing in the above-mentioned similarity Q, and will be considered as similarity with a music fragment inputted as the musical piece.

[0052]Next, an electronic music identification distribution service method using a portable telephone terminal concerning the 1st above-mentioned invention and a system of musical piece identification concerning the 2nd above-mentioned invention which is the 3rd invention, and its system are explained below. An advantage of this system is a point that all of investigation of a musical piece, purchase, reproduction, price payment, etc. are performed from one personal digital assistant (portable telephone terminal of this embodiment).

[0053]A system configuration of an embodiment to which electronic music identification distribution service which is the 3rd invention is applied is shown in drawing 7, and an operation method of the system concerned is explained using drawing 8 – drawing 11. The directions numerals S71 in drawing 7, S72, S75, S76, S78, S79, S82–S85, S90 – S99 show that processing of a step in which it is expressed with corresponding directions numerals in drawing 8 – drawing 11 is performed. A flow of processing in a musical piece registration stage performed beforehand is shown in drawing 8, and a flow of processing of a flow of processing of a flow of processing in a musical piece identification stage to drawing 10 in a musical piece audition stage to drawing 11 in a musical piece purchase stage is shown in drawing 9.

[0054]In a musical piece registration stage shown in drawing 8, as Step S71, first the musical piece distribution system 64 by the side of a musical piece vender, In the musical piece identification system 63 which sent data (said two or more composition data and attribute data of those) required for musical piece identification to the musical piece identification system 63 by the side of a musical piece identification person, and received these data. As mentioned above from composition data for the musical piece identification, the feature procession is

searched for, and it registers with attribute data and a correspondence price \*\*\*\*\* database. As Step S72, the musical piece distribution system 64 sends data (ID of composition data for two or more auditions, and composition data for each audition, etc.) required at the time of an audition of a musical piece to the musical piece identification system 63, and registers the data for a musical piece audition into a database with the musical piece identification system 63 concerned. Processing of Steps S71 and S72 may be performed simultaneously, and Step S72 may be processed after processing of Step S71.

[0055]Next, in a musical piece identification stage shown in drawing 9, as Step S73 first the portable telephone terminal 61 by the side of a musical piece buyer, If ON operation of said sound recording button 3 is done by operator of the terminal concerned, a part of musical piece (music fragment) which is performed for example, in a program and a commercial message at the ON operation time, or is passed in the street will be recorded. The portable telephone terminal 61 performs compression encoding or feature extraction as mentioned above to data of the music fragment by said music data treating part 7 as Step S74.

[0056]Next, as Step S75 the portable telephone terminal 61, To the cellular-phone operations system 62 by the side of a cellular-phone employment person with a musical piece identification demand generated according to a keystroke from the key input section 2. Transmitting data by which feature extraction was carried out [ above-mentioned ], the cellular-phone operations system 62 transmits further data by which feature extraction was carried out [ above-mentioned ] to the musical piece identification demand as it is as Step S76 to the musical piece identification system 63 by the side of a musical piece identification person.

[0057]As Step S77, as said 2nd invention explained the musical piece identification system 63 which received the above-mentioned musical piece identification demand, the above-mentioned compression coded data, or data by which feature extraction was carried out, it processes musical piece identification using a feature vector (search of a musical piece which serves as a candidate). In the music data treating part 7 by the side of the portable telephone terminal 61, when processing from sound recording of a music fragment to feature extraction is being performed, with the above-mentioned musical piece identification system 63, said matching using a feature vector sent from the portable telephone terminal 61 will perform musical piece identification. When having gone from sound recording of a music fragment to compression coding processing of music data, in the music data treating part 7 by the side of the portable telephone terminal 61 in the above-mentioned musical piece identification system 63. Feature extraction mentioned above after decoding music data which is sent from the above-mentioned portable telephone terminal 61, and by which compression encoding was carried out will be performed, and matching will perform musical piece identification further. After the above-mentioned musical piece identification processing is completed, the musical piece identification system 63 concerned, Transmit to the cellular-phone operations system 62, and further data (a musical piece name, a player name, an ID number of a musical piece, etc.) about a musical piece which serves as a candidate obtained by the musical piece identification processing as Step S78 as Step S79. The cellular-phone operations system 62 transmits data about the candidate musical piece to the portable telephone terminal 61 as it is.

[0058]In the portable telephone terminal 61 which received data about the above-mentioned candidate musical piece, it is judged whether predetermined alter operation for directing necessity of trying listening a candidate musical piece to said key input section 2 as Step S80 by an operator (musical piece buyer) of the terminal concerned was made. When an indicating input of trying listening a candidate musical piece from an operator is made in this step S80 ((Y) when trying listening), It progresses to processing of a musical piece audition stage shown in drawing 10, and processing is ended when an indicating input of not trying listening a musical piece from an operator is made on the other hand ((N) when not trying listening).

[0059]First, with the portable telephone terminal 61, if predetermined alter operation for choosing a musical piece for an audition to said key input section 2 as Step S81 by a terminal operator (musical piece buyer) if it progresses to a musical piece audition stage shown in drawing 10 is made, a musical piece for an audition according to the alter operation will be chosen.

[0060]Next, as Step S82 the portable telephone terminal 61, Transmitting a musical piece audition demand generated according to a keystroke from said key input section 2 to the cellular-phone operations system 62, the cellular-phone operations system 62 transmits the musical piece audition demand to the musical piece identification system 63 as it is as Step S83 further.

[0061]The musical piece identification system 63 which received the above-mentioned musical piece audition demand, Transmitting data for an audition according to the above-mentioned musical piece audition demand to the cellular-phone operations system 62 as Step S84, the cellular-phone operations system 62 transmits the data for an audition to the portable telephone terminal 61 as it is as Step S85 further. In the portable telephone terminal 61 at this time, the above-mentioned data for an audition is stored in said memory 18.

[0062]Next, with the portable telephone terminal 61 which received offer of the above-mentioned data for an audition, as Step S86. If predetermined alter operation of a purport that it tries listening a musical piece for the audition concerned to said key input section 2 by an operator (musical piece buyer) of the terminal concerned is made, Composition data for an audition accumulated in said memory 18 according to the alter operation is sent to the decryption machine 19 for audios, and composition data for the audition concerned is decoded and it sends to the loudspeaker 21 via D/A converter 20 further. Thereby, the operator (musical piece buyer) of the portable telephone terminal 61 concerned can listen to a musical piece for the above-mentioned audition.

[0063]Then, in the portable telephone terminal 61, it is judged whether predetermined alter operation for directing necessity of trying listening other musical pieces to said key input section 2 as Step S87 by an operator (musical piece buyer) of the terminal concerned was made. When an indicating input of trying listening other musical pieces from an operator is made in this step S87 ((Y) when trying listening), It returns to processing of selection of audition music of Step S81, and when an indicating input of not trying listening other musical pieces from an operator is made on the other hand ((N) when not trying listening), it progresses to processing of Step S88.

[0064]If it progresses to processing of Step S88, in the portable telephone terminal 61, it will be judged whether predetermined alter operation for directing necessity of purchasing the musical piece which it tried listening to the key input section 2 by an operator (musical piece buyer) was made. In this step S88, he follows (Y) to a musical piece purchase stage shown in drawing 11, and when an indicating input of, not purchasing from an operator the musical piece concerned which it tried listening on the other hand when an indicating input of purchasing from an operator the musical piece concerned which it tried listening is made, (N) ends processing.

[0065]In the portable telephone terminal 61, if predetermined alter operation for choosing a purchase musical piece to the key input section 2 as Step S89 by a terminal operator (musical piece buyer) first if it progresses to a musical piece purchase stage shown in drawing 11 is made, musical piece selection according to the alter operation will be performed.

[0066]Next, as Step S90 the portable telephone terminal 61, Transmitting a musical piece purchase request which shows a purchase intention of a musical piece chosen [ above-mentioned ] to the cellular-phone operations system 62, the cellular-phone operations system 62 transmits the musical piece purchase request to the musical piece distribution system 64 by the side of a musical piece vender as it is as Step S91 further.

[0067]The musical piece selling system 64 which received the above-mentioned musical piece purchase request, Transmitting composition data according to the musical piece purchase request concerned to the cellular-phone operations system 62 as Step S92, the cellular-phone operations system 62 transmits the composition data to the portable telephone terminal 61 as it is as Step S93 further. In the portable telephone terminal 61 at this time, the above-mentioned composition data is accumulated in the memory 18. Then, when predetermined alter operation of a purport that the musical piece concerned is reproduced to the key input section 2 by the terminal operator (musical piece buyer) concerned is made, the portable telephone terminal 61, Composition data accumulated in said memory 18 according to the alter operation is sent to the decryption machine 19 for audios, and the composition data concerned is decoded and it sends to the loudspeaker 21 via D/A converter 20 further. Thereby, the operator (musical piece buyer)

of the portable telephone terminal 61 concerned can listen to a musical piece which purchased [ above-mentioned ].

[0068]When identification and distribution of a musical piece are performed as mentioned above, identification of the musical piece and a price for purchase can also be paid here to a musical piece identification person and a musical piece distribution person by musical piece buyer by direct or a bank transfer, credit card balancing account via the Internet, etc., but. He is trying to pay through the above-mentioned cellular-phone employment person in an electronic music identification distribution system of this invention embodiment for package-izing of price payment.

[0069]First, the musical piece identification system 63 by the side of a musical piece identification person sends invoicing information for identification of a musical piece mentioned above as Step S94 to the cellular-phone operations system 62 by the side of a telephone employment person. As Step S95, a telephone employment person of the cellular-phone operations system 62 at this time executes that price by proxy to a musical piece buyer, and pays the above-mentioned musical piece identification person. As the price payment method in this case, electronic banking processing by which the money is transferred to a musical piece identification person's bank account, for example from a telephone employment person's bank account is performed, It may be made to send information which shows that the settlement of accounts was performed from the cellular-phone operations system 62 or a bank to the musical piece identification system 63 by the side of a musical piece identification person.

[0070]Similarly, the musical piece distribution system 64 by the side of a musical piece vender sends invoicing information on a musical piece distributed as mentioned above as Step S96 to the cellular-phone operations system 62 by the side of a telephone employment person. As Step S97, a telephone employment person of the cellular-phone operations system 62 at this time executes that price by proxy to a musical piece buyer, and pays the above-mentioned musical piece distribution person. As the price payment method in this case, electronic banking processing by which the money is transferred to a musical piece distribution person's bank account, for example from a telephone employment person's bank account is performed, It may be made to send information which shows that the settlement of accounts was performed from the cellular-phone operations system 62 or a bank to the musical piece distribution system 64 by the side of a musical piece distribution person.

[0071]Next, as Step S98, the cellular-phone operations system 62 adds the amount of money which was executed [ above-mentioned ] by proxy and paid to the above-mentioned musical piece identification person and a musical piece distribution person to phonecall charges etc., and asks a user (musical piece buyer) of the above-mentioned portable telephone terminal 61 for it. Then, as Step S99, by direct or a bank transfer, credit card balancing account via the Internet, etc., a user (musical piece buyer) of the portable telephone terminal 61 concerned bundles up or divides phonecall charges to which the above-mentioned musical piece identification price and a musical piece distribution price were added, and pays them to the above-mentioned telephone employment person. Also about payment of phonecall charges between a user (musical piece buyer) of the portable telephone terminal 61, and a telephone employment person. Electronic banking processing by which the money is transferred to a telephone employment person's bank account, for example from a bank account of a user (musical piece buyer) of the portable telephone terminal 61 is performed like \*\*\*\*, What sends information which shows that the settlement of accounts was performed from the portable telephone terminal 61 or a bank to the cellular-phone operations system 62 by the side of a telephone employment person is possible.

[0072]Processing of price balancing account is completed by the above.

[0073]According to this embodiment, it is realized that it is the same, of course for convenience even if the musical piece vender itself offers identification service although a musical piece identification person and a musical piece vender were explained as a different thing of explanation. Although composition data for an audition for convenience of explanation was explained that an identification person provides, it is clear that an essential difference does not arise even if a vender performs this portion.

[0074]After receiving distribution of composition data, are trying to pay an identification price

and a musical piece purchase price in this embodiment, but. When only musical piece identification is performed and musical piece purchase is not performed, it is also possible to charge only a price for the above-mentioned musical piece identification, and it can also be considered as free service about musical piece identification.

[0075]In this invention embodiment, although a portable telephone terminal is mentioned as an example, this invention is applicable, even if it is a portable information processing terminal like what is called a palmtop type computer. However, in this invention, by realizing all, such as musical sound recording, musical piece identification, musical piece distribution, purchase, and playback, in one set of a portable telephone terminal, as mentioned above, a portable information processing terminal is made unnecessary and what is called a portable audio recording and reproducing device is also further made unnecessary.

[0076]As explained above, according to this invention embodiment, television broadcasting, a radio broadcast, etc., It is possible to be able to search a musical piece candidate and to perform this musical piece candidate's audition, identification of a musical piece name, the purchase of a musical piece, and playback of a musical piece by one set of a portable telephone terminal further from a part of music which is flowing by street broadcast etc. According to this invention embodiment, namely, television broadcasting, a radio broadcast, etc., It becomes possible to be able to investigate easily music which is flowing by street broadcast etc., and to become available easily about the musical piece, therefore for a buyer's giving up purchase, without the ability to identify a musical piece to decrease, and to save time and a labor for purchase remarkably.

[0077]

[Effect of the Invention]In [ according to / so that clearly from the above explanation / this invention ] a portable telephone terminal, recording the music data incorporated via the sound electrical transducing means -- the recorded music data -- compression encoding -- or, In [ extract the characteristic quantity for identifying the musical piece name of the music concerned from the recorded music data, send to the musical piece identification / distribution side, and ] a musical piece identification side / the distribution side, The candidate of a musical piece is searched from the compression encoding or the extracted characteristic quantity, In [ send the data for an audition of the candidate's musical piece to a portable telephone terminal, send the musical piece as which purchase was determined to a portable telephone terminal from the musical piece identification / distribution side as a result of an audition with a portable telephone terminal, and ] the cellular-phone employment side, Even if it is the partial fragment of a musical piece in which performance, reproduction, broadcast, etc. are carried out, for example by performing fee collection according to the musical piece which it tried listening, and the purchased musical piece, identification and acquisition (for example, purchase) are easily possible in the musical piece, and it becomes possible simultaneously about the payment of the price for the musical piece, reproduction of a musical piece, etc.

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[Translation done.]

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## DESCRIPTION OF DRAWINGS

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**[Brief Description of the Drawings]**

**[Drawing 1]**It is a block diagram showing the outline composition of the transmission section of the portable telephone terminal concerning an embodiment of the invention.

**[Drawing 2]**It is a block diagram showing the outline composition of the receive section of the portable telephone terminal concerning an embodiment of the invention.

**[Drawing 3]**It is a block diagram showing the outline composition of the system for registering a musical piece to a database.

**[Drawing 4]**It is a figure used for explanation of the feature procession and a mask pattern.

**[Drawing 5]**It is a block diagram showing the outline composition of the musical piece identification system for identifying a musical piece from a music fragment.

**[Drawing 6]**It is a flow chart which shows the flow of a matching method.

**[Drawing 7]**It is a system configuration figure showing the entire configuration of an electronic music identification distribution system.

**[Drawing 8]**It is a flow chart which shows the flow of a musical piece registration method.

**[Drawing 9]**It is a flow chart which shows the flow of a musical piece identification method.

**[Drawing 10]**It is a flow chart which shows the flow of the musical piece audition method.

**[Drawing 11]**It is a flow chart which shows the flow of a musical piece buying method.

**[Description of Notations]**

1 A microphone, 2 key input sections, 3 sound recording buttons, 4 A/D converters, 5 A switch and 6 The coding equipment for sounds, 7 music-data treating part, and eight multiplexers, 9 A modulator and 10 A temporary storage part and 11 A demodulator and 12 Demultiplexer, 13 A display processing part and 14 A display and the decryption machine for 15 sounds, 16, 20 D/A converters, 17, and 21 A loudspeaker and 18 memories, 19 The decryption machine for audios, 33, and 43 [ A portable telephone terminal and 62 / A cellular-phone operations system and 63 / A musical piece identification system and 64 / Musical piece distribution system ] The power-spectrum analyzor, 34, and 44 The feature procession generation part and 35 A database, 45 matching parts, and 61

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**[Translation done.]**

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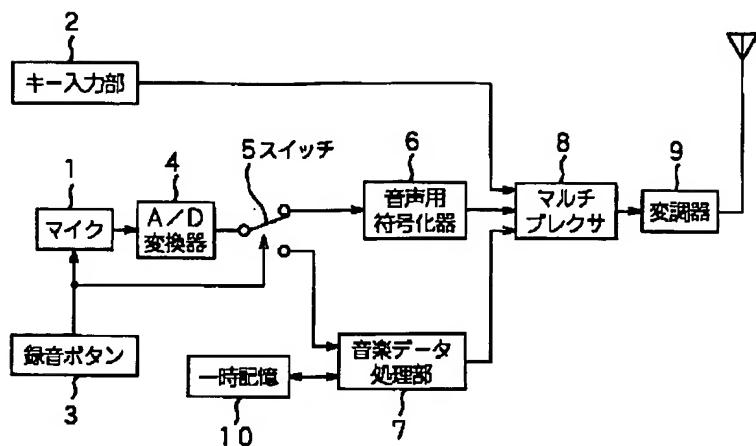
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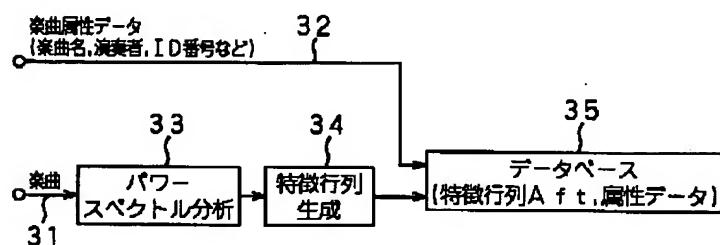
**DRAWINGS**

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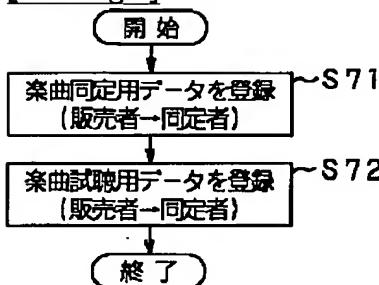
**[Drawing 1]**



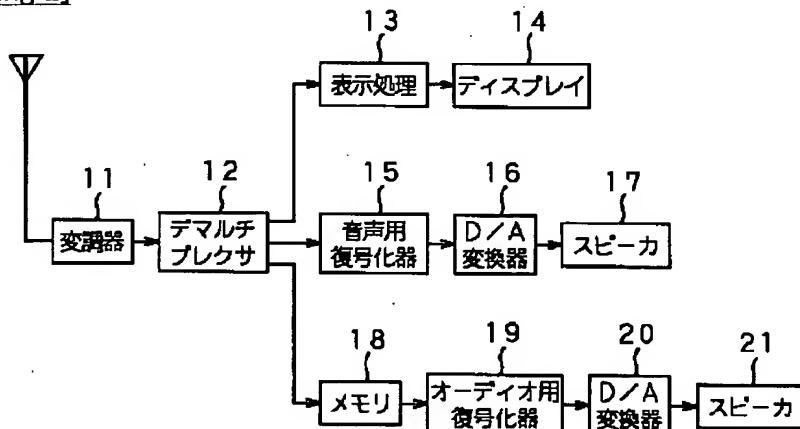
[Drawing 3]



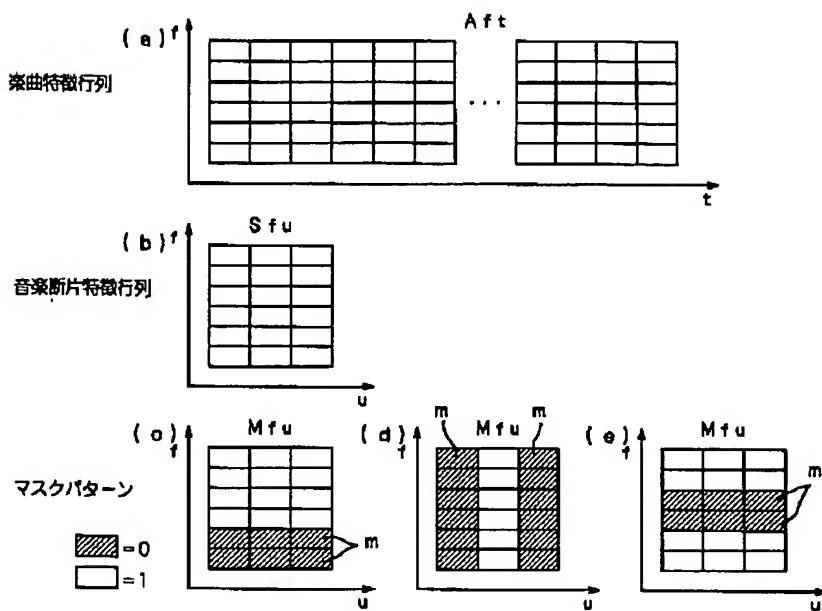
[Drawing 8]



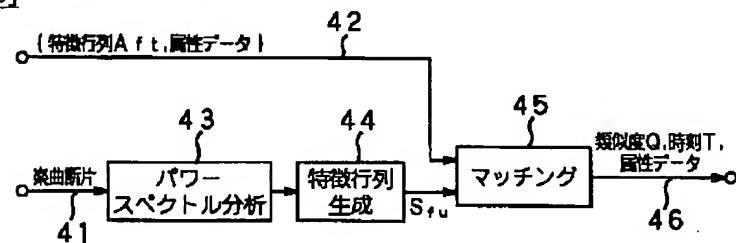
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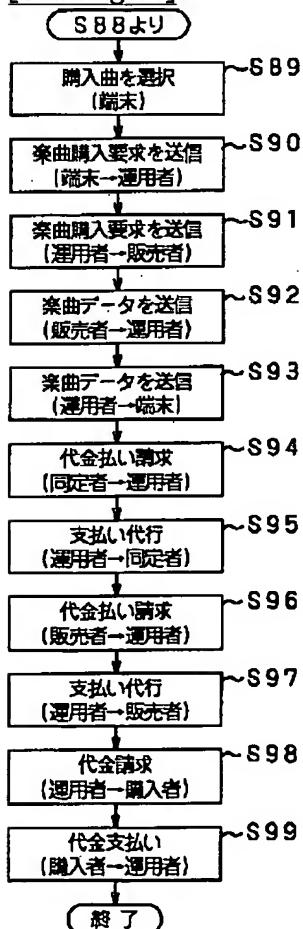
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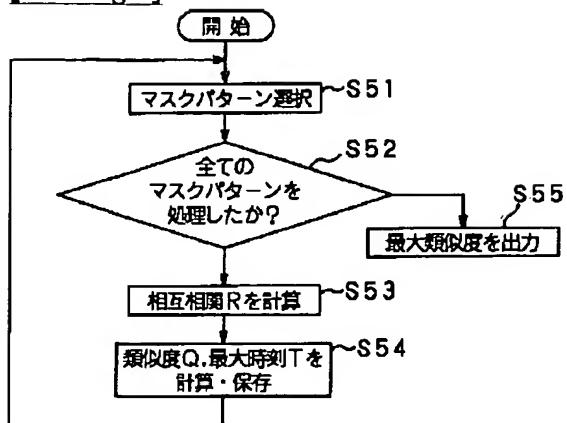
[Drawing 5]



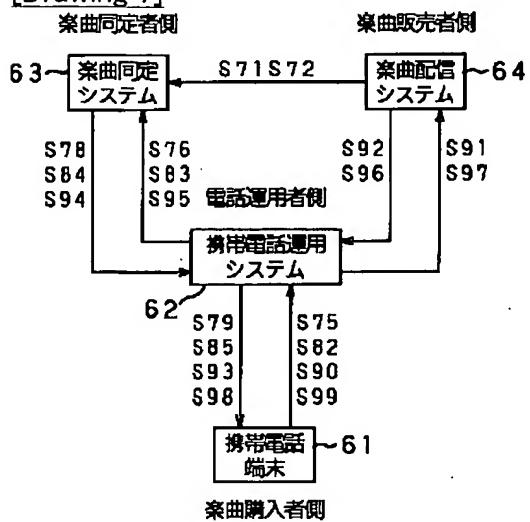
[Drawing 11]



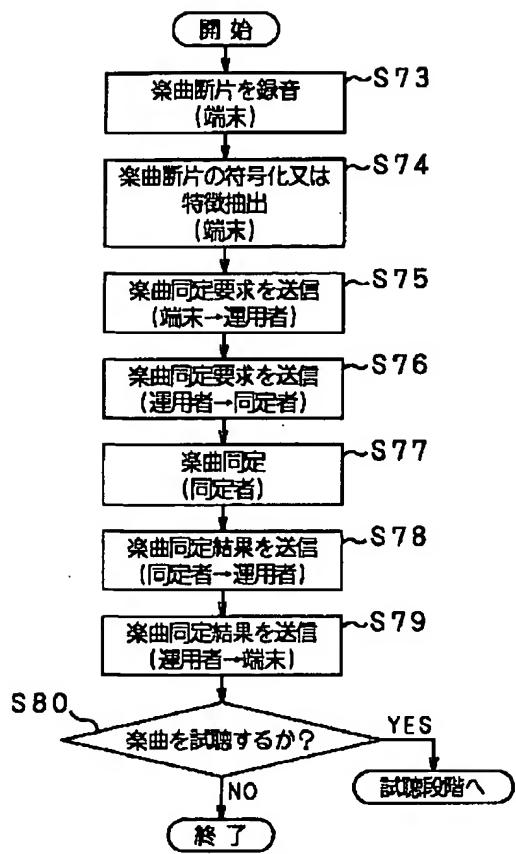
[Drawing 6]



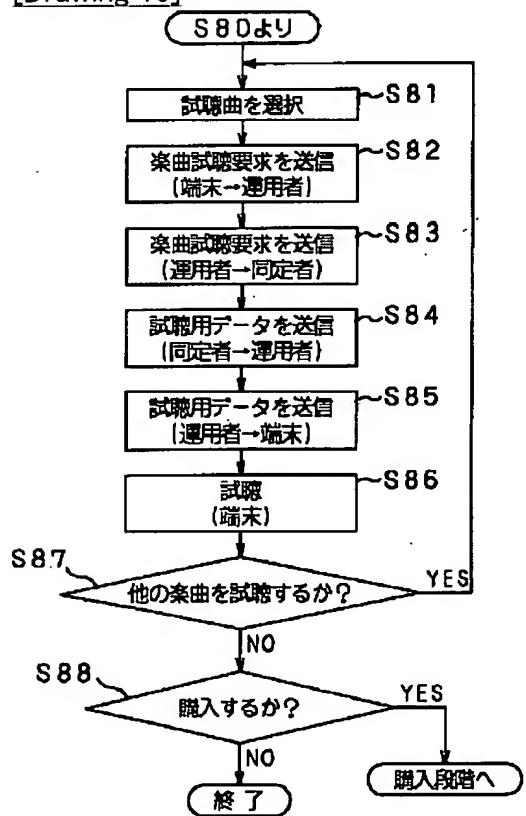
[Drawing 7]



[Drawing 9]



[Drawing 10]



[Translation done.]